

REMARKS

The following remarks are responsive to the Final Office Action dated December 26, 2007. Claims 1-48 are pending.

Response to Arguments

Applicant notes as an initial matter that, in the final Office Action, the response to Applicant's arguments appears to be insufficient. The Office Action stated that Applicant's arguments submitted on October 1, 2007 in response to the previous Office Action dated July 2, 2007 "have been considered but are moot in view of the new ground(s) of rejection."¹

However, the previous Office Action dated July 2, 2007 and the current Office Action dated December 26, 2007, relied on virtually the same grounds of rejection, Ramesh (US 6,085,103) in view of Marchetto (US 5,414,734), to reject Applicant's pending claims. The rationale presented in support of the rejection in view of Ramesh and Marchetto was essentially the same in the Final Office Action as in the previous Office Action. However, Applicant submitted detailed arguments against application of Ramesh and Marchetto to the claims.

MPEP 707.07(f) provides that "where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's arguments and answer the substance of it." The final Office Action essentially repeated the previous rejection, but provided no answer going to the substance of Applicant's previous arguments. Applicant respectfully requests a detailed reply to Applicant's arguments in the next communication so that Applicant may better understand the Examiner's position with respect to Ramesh and Marchetto.

Claim Rejection Under 35 U.S.C. § 103

The Final Office Action rejected claims 1-48 under 35 U.S.C. 103(a) as being unpatentable over Ramesh (US 6,085,103) in view of Marchetto (US 5,414,734).

Applicant respectfully traverses the rejection. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention, as defined by independent claims 1, 13, 25 and 37.

¹ Office Action dated December 26, 2007, page 6.

As an example, the applied references fail to disclose or suggest a method of testing a plurality of wireless subscriber stations, comprising generating a broadcast signal, digitally creating a plurality of independently faded signals from the broadcast signal, and transmitting the plurality of independently faded signals to each of the wireless subscriber stations under test, as set forth in claim 1.

Likewise, the applied references lack any teaching that would have suggested an apparatus to test a plurality of wireless subscriber stations, comprising a base station simulator configured to generate a broadcast signal, a digital processor configured to create a plurality of independently faded signals from the broadcast signal, and an interface configured to transmit the plurality of independently faded signals to each of the wireless subscriber stations under test, as defined in claim 13.

Both Ramesh and Marchetto are directed to systems that compensate for signals that may experience fading during transmission. Ramesh describes a system that compensates for fading in analog AM radio signals.² The Ramesh system includes a transmitter that compresses an analog AM signal to create gaps, and fills those gaps with pilot symbols having known characteristics.³ Ramesh explains that “[t]he time-compressed analog AM signal is transmitted over the fading channel.”⁴ Using the known characteristic of the pilot symbols, a receiver in the Ramesh system estimates the fading that occurred in the transmission channel and adjusts the amplitude and phase of the faded signal to compensate for the fading.⁵

Marchetto is also directed to a system that compensates signals that may experience fading during transmission. Again, like Ramesh, the Marchetto system includes a transmitter that inserts pilot symbols within a data bearing signal and transmits the signal.⁶ Marchetto states that the transmitted modulated signal is subject to loss of data due to simple fading.⁷ A receiver in the Marchetto system computes various impulse response estimates from the received signal

² Ramesh, Title and Abstract

³ Ramesh, Abstract

⁴ Ramesh, Abstract (emphasis added)

⁵ Ramesh, Abstract

⁶ Marchetto, Abstract.

⁷ *Id.*

using the pilot symbols in order to adjust the data bearing signals.⁸ In this manner, the receiver in the Marchetto system “compensates for fading and interference.”⁹

Hence, the Ramesh and Marchetto references both describe systems in which pilot symbols are inserted into data signals to permit a receiver to compensate for fading that may occur during the transmission of the signals via a wireless communication channel. Neither reference makes any mention of testing wireless subscriber stations, much less digitally creating independently faded signals from a broadcast signal, and transmitting the independently faded signals to each of a plurality of wireless subscriber stations under test.

Ramesh and Marchetto, whether taken alone or in combination, lack any teaching that would have suggested an apparatus or method to test a plurality of wireless subscriber stations. To the contrary, as discussed above, Ramesh and Marchetto disclose systems that compensate for signal fading. Ramesh and Marchetto accept that fading will occur, and set out to compensate for the fading by incorporating pilot symbols in the transmitted signal. Neither reference describes the testing of wireless subscriber stations, whether by digital creation and transmission of independently fade signals or otherwise.

In support of the rejection of Applicant’s claims 1 and 13, the Office Action broadly characterized Ramesh as teaching an apparatus to test a plurality of wireless subscriber stations, but pointed to no teaching within Ramesh that is pertinent to testing wireless subscriber stations. The fact that Ramesh does not even contemplate testing underscores the additional differences discussed below. In the absence of testing, it is unclear why one of ordinary skill in the art would have had any apparent reason to create independently faded signals from a broadcast signal and transmit such signals to wireless subscriber stations.

The Office Action further asserted that Ramesh describes creating independently faded signals from a broadcast signal, citing Col. 6, lines 17-21. In the passage cited by the Office Action (claim 14 of Ramesh), the Ramesh reference recites a demultiplexer operable to separate a received analog AM input signal into faded pilot symbols and faded input signals. However, the demultiplexer described by Ramesh resides within an AM signal receiver, and does not transmit the faded signals to wireless subscriber stations under test. Nor does the demultiplexer create independently faded signals from a broadcast signal. Rather, the faded signals are

⁸ *Id.*

received from transmitter via a wireless communication channel. The faded signals are created by the wireless channel, and not by any feature within the Ramesh system. The demultiplexer merely divides the received signal into pilot symbols and a faded signal component.

The Office Action acknowledged that Ramesh does not describe digitally creating independently faded signals. However, the Office Action characterized Marchetto as teaching the use of a digital processor and an interface to transmit independently faded signals to wireless subscriber stations under test, citing column 5, lines 57-63, column 7, lines 3-13, and signals 68 and 70 of FIG. 3. However, the signals 68 and 70 in FIG. 3 are not digitally created by the transmitter 42 of FIG. 3. Instead, a transmitter 42 generates a signal that may experience fading as it is transmitted across a wireless channel.

In other words, in Marchetto, a single signal is transmitted via antenna 66 and then subjected to fading within the wireless communication channel. Reference numerals 68 and 70 represent faded signals 68, 70, which may be produced by reflection of the single transmitted signal from man-made or natural objects.¹⁰ Clearly, Marchetto provides no teaching that would have suggested digital creation of a plurality of independently faded signals. On the contrary, Marchetto merely describes the natural phenomenon of signal fading that may occur across a wireless channel.

As discussed above, the Ramesh and Marchetto references lack any teaching that would have suggested digital creation of a plurality of independently faded signals from a broadcast signal. Consequently, the applied references likewise could not have suggested the transmission of such a plurality of independently faded signals to wireless subscriber stations, as required by Applicant's claims. Again, in Ramesh and Marchetto, faded signals are formed as a single transmitted signal that is transmitted across a wireless communication channel. Reflections from man-made or natural objects can produce fading that results in multiple faded signals, as is well known in the wireless telecommunication arts. The faded signals are neither created nor transmitted by any feature of the Ramesh and Marchetto systems. Instead, reference numerals 68 and 70 in FIG. 3 of Marchetto depict Rayleigh fading channels that arise within the transmit environment.

⁹ *Id.*

¹⁰ Marchetto, column 7, lines 3-16.

In contrast to the claimed invention, Ramesh and Marchetto do not describe digital creation and transmission of independently faded signals. Instead, Ramesh and Marchetto both describe fading as an undesirable side-effect of wireless signal transmission. Ramesh refers to fading as a major problem,¹¹ while Marchetto refers to “several propagation phenomena that greatly impact on the strength of the signal at the receiver.”¹² Both Ramesh and Marchetto are directed to techniques that compensate for the undesirable effect of signal fading, and not techniques that purposefully create and transmit faded signals for testing, as required by Applicant’s independent claims.

In various aspects, Applicant’s claimed invention may purposefully create and transmit faded signals that would otherwise be considered undesirable in order to enable the testing of wireless subscriber stations. On the other hand, Ramesh and Marchetto view faded signals as undesirable, and seek to compensate received signals using pilot symbols to reduce the effects of signal fading. Ramesh and Marchetto offer virtually no teaching that is even remotely relevant to the claimed invention.

With respect to claim 13, Ramesh and Marchetto further lack any teaching of a base station simulator configured to generate a broadcast signal, nor a digital processor configured to create a plurality of independently faded signals from such a broadcast signal.

In view of the remarks above, it should be clear that Ramesh and Marchetto fail to disclose the requirements of Applicant’s claims 1, 13, 25 and 37. On this basis, Applicant respectfully requests withdrawal of the rejection of claims 1-48 under section 103.

Each of the dependent claims 2-12, 14-24, 26-36, and 38-48 incorporate the limitations of their respective independent claims and are allowable over Ramesh and Marchetto for at least the reasons described above. Ramesh and Marchetto also fail to disclose or suggest numerous additional limitations set forth in the dependent claims.

With respect to dependent claims 2, 26, and 37, as an example, the Ramesh and Marchetto references fail to suggest monitoring each of a plurality of subscriber stations under test to determine whether it can recover the broadcast signal from the plurality of independently faded signals. The Office Action cited column 7, lines 16-21, of Marchetto. However, the cited

¹¹ Ramesh, column 1, lines 10-15.

¹² Marchetto, column 1, lines 14-16.

passage merely states that a receiver 40 uses pilot symbols to recover data symbols affected by fading and interference.

As another example, with respect to dependent claims 5, 17, 29, and 41, the applied references fail to disclose or suggest the creation and transmission of independently faded signals including a first faded signal and a second faded signal, the first faded signal having a different fading model than the second faded signal. The Office Action cited column 7, lines 3-13, for these limitations. In the cited passage, however, Marchetto merely describes the effects of fading on a transmitted signal. The fading in Marchetto is a function of the transmit environment, and not different fading models used to digitally create faded signals.

With respect to claims 6, 30 and 42, as an additional example, the applied references provide no teaching that would have suggested digitally creating each of a plurality of independently faded signals by generating multiple copies of a broadcast signal, independently scaling each of the multiple copies as a function of one or more parameters relating to a fading model, and combining the result. For these limitations, the Office Action cited column 7, lines 49-67, of Marchetto. In the cited passage, however, Marchetto describes processing a received signal to recover data symbols subject to fading. This feature of Marchetto bears no relationship to the requirements of claims 6, 30 and 42.

CONCLUSION

In the foregoing remarks, Applicant has focused on the requirements of the independent claims for purposes of conciseness. In so doing, Applicant in no way admits or acquiesces in the propriety of the Office Action in regard to the interpretation of the prior art or any of the additional limitations set forth in the various claims, including the limitations of the dependent claims.

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 17-0026. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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